

WHAT IS CLAIMED

1. A filter comprising activated carbon fibers, wherein the activated carbon fibers are arranged so that the filter has a Virus Removal Index (VRI) of at least about 99.99% at a flow rate of 100 ml/min and an MS2 influent concentration of 5×10^8 , wherein the flow rate is maintained for at least one hour, wherein said activated carbon fibers are provided in the form of an activated carbon fiber composite and wherein said composite has a cured density prior to activation of between substantially 0.1-0.7 g/cm³, an activated density following activation of between substantially 0.05-0.55 g/cm³ and a burnoff during activation between substantially 0-90%.
2. The filter of Claim 1 having a VRI of at least about 99.999% at a flow rate of 100 ml/min and an MS2 influent concentration of 5×10^8 , wherein the flow rate is maintained for at least one hour.
3. The filter of Claim 1 having a VRI of from about 99.99% to about 99.9999% at a flow rate of 100 ml/min and an MS2 influent concentration of 5×10^8 , wherein the flow rate is maintained for at least one hour.
4. The filter of Claim 1 having a Bacteria Removal Index (BRI) of at least about 99.9999% at a flow rate of 100 ml/min and an *E. coli* influent concentration of 5×10^8 , wherein the flow rate is maintained for at least one hour.
5. The filter of Claim 1 having a Parasite Removal Index (PRI) of at least about 99.9% at a flow rate of 100 ml/min and a *Cryptosporidium parvum* influent concentration of 6×10^6 , wherein the flow rate is maintained for at least one hour.
6. The filter of Claim 1, wherein said burnoff during activation is between substantially 0-80%.
7. The filter of Claim 6, wherein said activated carbon fiber composite has a void volume of between substantially 63-95% and a mean inter-fiber spacing of between substantially 30-302 µm.

8. The filter of Claim 6, wherein said activated carbon fiber composite has a void volume between substantially 71-81% and a mean inter-fiber spacing of between substantially 42-73 μm .
9. The filter of Claim 7, further having a micropore volume of between substantially 0-0.78 cc/g and a BET surface area of between substantially 0-4000 m^2/g .
10. The filter of Claim 8, further having a micropore volume of between substantially 0.37-0.51 g/cc and a BET surface area of between substantially 600-1500 m^2/g .
11. The filter of claim 1, wherein said activated carbon fibers are provided in the form of an activated carbon fiber composite and wherein said composite has: (i) a cured density prior to activation of between substantially 0.36-0.55 g/cm^3 , (ii) an activated density following activation of between substantially 0.076-0.495 g/cm^3 , and (iii) a burnoff during activation of between substantially 21-45%.
12. The filter of Claim 11, further having (iv) a void volume between substantially 63 - 95% and (v) a mean inter-fiber spacing of between substantially 30-302 μm .
13. The filter of Claim 12, further having (iv) a void volume between substantially 71-81% and (v) a mean inter-fiber spacing of between substantially 42-73 μm .
14. The filter of Claim 12 further having (vi) a micropore volume of between substantially 0-0.78 cc/g and a BET surface area of between substantially 0-4000 m^2/g .
15. The filter of Claim 13, further having (vi) a micropore volume of between substantially 0.37-0.51 cc/g and a BET surface area of between substantially 600-1500 m^2/g .
16. The filter of Claim 11, wherein said carbon fiber composite filter has a ratio of cured density to activated density of between substantially 1.1:1 to 4.7:1.

17. The filter of Claim 1, wherein said filter is prepared by the steps of:
 - (i) mixing between one part by weight carbon fibers having a diameter between substantially 5-100 μm and a length between substantially 0.1-0.4 mm with between 0.05-1.0 part by weight binder and 5-50 part by weight water in order to produce a slurry;
 - (ii) placing said slurry in a molding vessel;
 - (iii) filtering said slurry thereby producing a green monolithic body;
 - (iv) dewatering and drying said green monolithic body;
 - (v) curing said green monolithic body thereby producing a cured monolithic body;
 - (vi) carbonizing said cured monolithic body thereby producing a carbon fiber composite defining an open, permeable structure; and
 - (vii) activating said carbon fiber composite whereby said carbon fibers are made porous.
18. The filter of Claim 1, wherein said filter is prepared by the steps of:
 - (i) mixing between 2-12 weight percent of carbon fibers having a diameter between substantially 5-100 μm and a length between substantially 0.1-0.4 μm with between 1.25-3.0 weight percent binder and 8-50 cc of water per gram of carbon fibers in order to produce a slurry;
 - (ii) placing said slurry in a molding vessel;
 - (iii) filtering said slurry thereby producing a green monolithic body;
 - (iv) dewatering and drying said green monolithic body;
 - (v) curing said green monolithic body thereby producing a cured monolithic body;
 - (vi) carbonizing said cured monolithic body thereby producing a carbon fiber composite defining an open permeable structure; and
 - (vii) activating said carbon fiber composite whereby said carbon fibers are made porous and said composite has an activated density of substantially 0.076-0.495 g/cm^3 .

19. The filter of Claim 1, wherein the filter has a mean inter-fiber spacing between about 30.3 μm and about 302 μm .
20. The filter of Claim 1, wherein the activated carbon fibers have a specific surface area between about 100 m^2/g and about 4000 m^2/g .
21. The filter of Claim 1, wherein the filter has a bulk density between about 0.15 g/cm^3 and about 0.8 g/cm^3 .
22. A filter comprising a filter material consisting essentially of activated carbon fibers having a specific surface area between about 100 m^2/g and about 4000 m^2/g , wherein the activated carbon fibers are arranged so that the filter has a Virus Removal Index (VRI) of at least about 99.99% at a flow rate of 100 ml/min and an MS2 influent concentration of 5×10^8 , wherein the flow rate is maintained for at least one hour, and wherein the filter has a mean inter-fiber spacing between about 30.3 μm and about 302 μm and a bulk density between about 0.15 g/cm^3 and about 0.8 g/cm^3 .
23. The filter of Claim 22, wherein the filter has a VRI of at least about 99.999% at a flow rate of 100 ml/min and an MS2 influent concentration of 5×10^8 , wherein the flow rate is maintained for at least one hour.
24. The filter of Claim 23, wherein the activated carbon fibers are free.
25. The filter of Claim 23, wherein the activated carbon fibers are formed into a composite.
26. The filter of Claim 23, wherein a mixture of activated carbon fibers of different mean diameter, length and/or shape are utilized.